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LTE & 5G for Critical Communications: 2023 – 2030 – Opportunities, Challenges, Strategies & Forecasts

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Abstracts

For nearly a century, the critical communications industry has relied on narrowband LMR (Land Mobile Radio) networks for mission-critical voice and low-speed data services. Over time, these systems have evolved from relatively basic analog radios to digital communications technologies, such as P25 (Project 25) and TETRA, to provide superior voice quality, end-to-end encryption and other advanced features. However, due to their inherent bandwidth and design limitations, even the most sophisticated digital LMR networks are unable to support mobile broadband and data-driven IIoT (Industrial IoT) applications that have become vital for public safety, defense, utilities, transportation, oil and gas, mining and other segments of the critical communications industry.

The 3GPP-defined LTE and 5G NR standards have emerged as the leading candidates to fill this void. Over the last decade, a plethora of fully dedicated, hybrid commercial-private and secure MVNO-based 3GPP networks have been deployed to deliver critical communications broadband capabilities – in addition to the use of commercial mobile operator networks – for application scenarios as diverse as PTT group communications, real-time mobile video surveillance, untethered AR/VR/MR (Augmented, Virtual & Mixed Reality), collaborative mobile robots, AGVs (Automated Guided Vehicles) and automation in industrial environments. These networks range from nationwide PPDR (Public Protection & Disaster Relief) broadband platforms such as the United States' FirstNet (First Responder Network), South Korea's Safe-Net (National Disaster Safety Communications Network), France's RRF (Radio Network of the Future) and Finland's VIRVE 2.0 mission-critical broadband service to regional cellular networks covering the service footprint of utility companies, FRMCS (Future Railway Mobile Communication System)-ready networks for train-to-ground communications and NPNs (Non-Public Networks) for localized wireless connectivity in settings such as airports, maritime ports,

oil and gas production facilities, power plants, substations, offshore wind farms, remote mining sites, factories and warehouses.

At present, most critical communications user organizations employ LTE and 5G NR as complementary technologies to augment existing voice-centric LMR networks with broadband capabilities. However, with the standardization and commercial availability of MCX (Mission-Critical PTT, Video & Data), IOPS (Isolated Operation for Public Safety), HPUE (High-Power User Equipment), URLLC (Ultra-Reliable, Low-Latency Communications), TSC (Time-Sensitive Communications), satellite-based NTN (Non-Terrestrial Network) integration and other 3GPP-defined critical communications features, LTE and 5G NR networks are increasingly gaining recognition as an all-inclusive critical communications platform for the delivery of mobile broadband and IIoT capabilities, as well as MCPTT (Mission-Critical PTT) voice functionality comparable to that offered by traditional LMR systems.

SNS Telecom & IT estimates that global investments in LTE and 5G network infrastructure for critical communications reached $3.4 Billion in 2023, driven by public safety broadband, smart grid modernization, FRMCS readiness and Industry 4.0 initiatives. The market is further expected to grow at a CAGR of approximately 17% over the next three years, eventually accounting for more than $5.5 Billion by the end of 2026.

Spanning over 4,000 pages, the "LTE & 5G for Critical Communications: 2023 – 2030 – Opportunities, Challenges, Strategies & Forecasts" report package encompasses two comprehensive reports covering the use of LTE and 5G NR networks for critical communications:

The Private LTE & 5G Network Ecosystem: 2023 – 2030 – Opportunities, Challenges, Strategies, Industry Verticals & Forecasts

The Public Safety LTE & 5G Market: 2023 – 2030 – Opportunities, Challenges, Strategies & Forecasts

his report package provides an in-depth assessment of LTE and 5G for critical communications, cluding the value chain, market drivers, barriers to uptake, enabling technologies, operational and usiness models, vertical industries, application scenarios, key trends, future roadmap, andardization, spectrum availability and allocation, regulatory landscape, case studies, ecosystem ayer profiles and strategies, as well as LTE and 5G network investment forecasts from 2023 till 2030.

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he report package comes with an associated Excel datasheet suite covering quantitative data from all umeric forecasts presented in both reports.

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Contents

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